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EXAMINER	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/698,564
Filing Date: October 31, 2003
Appellant(s): YADAV, TAPESH

Alka A. Patel
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed September 1, 2009 appealing from the Office action mailed April 1, 2009.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,489,449	UMEYA ET AL	2-1996
5,984,997	BICKMORE ET AL	11-1999
5,356,120	KONIG ET AL	10-1994
3,565,676	HOLZL	2-1971

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Examiner Note

(1) All rejections under 35 USC § 112 have been withdrawn.

(2) For examining purposes the limitation “high temperature" in claim 1 was interpreted according to the specification as originally filed (See P89 of Published Application) as a temperature **> 1500^{0}C**.

Claims 1, 4, 6, 11-15, 17, 18, 20, 27 and 31-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Umeya et al (US 5,489,449) in view of Bickmore et al (US 5984997).

Umeya et al discloses a method of manufacturing powder by introducing particles of a *core* material in a monodisperse state into a *stream* carrying the ultrafines of a coating material formed in a vapor phase from a metal precursor by a Chemical Vapor Deposition (CVD) or a Physical Vapor Deposition (PVD) such as a Radio Frequency Plasma process (RF) and a laser process, such that said ultrafines of the coating material contact particles of the core material in a fluidized state to strongly deposit the ultrafines onto the surface of said core material (See column 2, lines 23-25). For example, diamond *core* particles are coated with titanium ultrafines by introducing argon (carrier gas) and hydrogen (claimed reactive fluid) into the plasma torch to form a plasma flame, then introducing a **(liquid)** titanium chloride into the plasma flame while being carried by an argon gas carrier (claimed spraying) by which there were produced titanium ultrafines (See column 6, lines 16-22). Subsequently, diamond core particles were introduced while being carried by an argon carrier gas supplied and the diamond particles were brought into contact with the titanium ultrafines in a fluidized state (See column 6, lines 23-27). The diamond

particles were coated uniformly with titanium ultrafines (0.01-0.05 μ predominantly 0.02 μ) (See column 6, lines 29-32).

As to claimed order of adding ingredients, in short, Umeya et al teaches introducing three components into a stream of (inert) Ar gas in the following order:

adding hydrogen reactive fluid (1);

adding **liquid** titanium chloride precursor (2); and then

adding diamond core particles (3).

Thus, Umeya et al fails to teach claimed order of adding three components:

adding a liquid metal precursor (2) to core particles (3) or adding (3) to (2);

adding the formed mixture (2)+(3); and then

adding reactive fluid (1).

It is well settled that selection of ***any*** **order** of mixing ingredients is prima facie obvious. In re Gibson, 39 F.2d 975, 5 USPQ 230 (CCPA 1930). Also, it is well settled that selection of ***any*** **order** of performing process steps is prima facie obvious in the absence of new or unexpected results. In re Burhans, 154 F.2d 690, 69 USPQ 330 (CCPA 1946). See MPEP 2144.04 [R-6], IV C. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have performed process steps in Umeya et al in any order including claimed order with the expectation of providing the desired coated particles in the absence of showing of criticality.

As to Appellant's argument with respect to an order of addition of the metal and anion precursors, absent objective factual evidence of unexpected results, it is a matter of obviousness for one of ordinary skill in the art to use any order of addition of reaction components.

Moreover, note that the mixture of (2) and (3) is a *physical* mixture of ***unreacted*** liquid metal precursor (2) and inert core particles (3) since a metal precursor decomposes only in a reaction chamber at high decomposing temperatures. Therefore, the step of adding a preformed mixture of (2) and (3) to the Ar stream seems reasonably to be substantially the same as the step of **simultaneous** adding both the liquid metal precursor (2) and the core particles (3) to the Ar stream.

It is well settled that the performance of two steps **simultaneously**, which have previously been performed in *sequence* was held to be obvious. *In re Tatincloux* 108 USPQ 125 (CCPA 1955).

As to claimed step of *quenching* and the use of metal *carboxylates*, Umeya et al further teaches that the *core* and the *coating* materials are composed of the inorganic non-metallic or metallic materials which include all inorganic materials known as refractory or ceramics, e.g. metal oxides and nitrides and intermetallic compounds and alloys such as Fe-Ni-Si alloy, Fe-Cr-Al alloy, Fe-Cr-Mo alloy, Fe-Ni-Cr alloy, Ni-Cr alloy and others; and composite materials thereof (See column 2, lines 36-62). The coating materials may be the same as or different from the core materials as mentioned above, depending on the desired properties and functions of the coated particles (See column 2, lines 62-64).

Umeya et al fails to teach that ultrafines of the inorganic non-metallic or metallic materials are prepared by processing metal *carboxylates* in the presence of air; and the combustion product gases are cooled and *quenched* to freeze the growth and further reaction of the product (Claim 1).

Bickmore et al teaches that ultrafine particles may be produced by feeding metal-containing precursors of multiple metals (See column 3, lines 52-67) such as nitrate, nitrites, nitriles, nitrides, carbonates, bicarbonates, hydroxides, cyanos, organometallics, ***carboxylates*** (See column 4, line 32), amines, and amides (See column 4, lines 30-33) in the form of solutions or suspensions or emulsions (See column 4, lines 33-35) in *atomized* state (i.e. claimed spraying) or, alternatively, carried in a gas or a mix of gases (See column 5, lines 19-20) to a **reaction zone** thereby creating a *vapor* of the precursor; adding nitrogen, hydrogen (See column 2, lines 33-34), air, oxygen or ammonia (claimed reactive fluid) to the reaction zone (See column 5, lines 23-25); conducting ***combustion*** (as required by claim 14) (See column 5, lines 19-46) using any kind of flame including *externally heated* flame, *multiple burner flame* or a combination of different flames (See column 5, lines 44-46) at temperatures in **excess of 600^{0}C** at which diffusion kinetics will be sufficiently fast that a compositionally uniform powder will be produced (See column 5, lines 46-50). The combustion product gases are *quenched* (See column 5, line 60) to freeze the growth and further reaction of the product by expansion of gases, addition of coolant gases or liquids, addition of materials which absorb heat (for example, heat absorption associated with phase transformation of liquid nitrogen to gaseous nitrogen), radiative cooling, conductive cooling, convective cooling, application of cooled surface, or impinging into liquid (See column 5, lines 64-67 to column 6, lines 1-4). It is the Examiner's position that temperatures in **excess of 600^{0}C** include claimed temperature of "greater than 1500^{0}C" since Bickmore et al do not limit combustion temperatures.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used metal carboxylate in the form of solutions or emulsions as a metal

precursor in Umeya et al with the expectation of providing the desired coated particles since Umeya et al does not limit its teaching to any particular precursor.

As to claimed ratio of at least 2, Umeya et al teaches that the ultrafines of the coating materials have an average particle size in the range of 0.005μ to 0.5μ (5 nm-500 nm) (See column 2, lines 66-67); and the core particles may have an average particle size of e.g. 0.1 μ (100 nm) - several μ (See column 4, lines 62-64). Note that an average particle size of each of the core and coating particles *overlap* claimed range of "nanopowders" and "nano-dispersed nanopowders" of less than 250 nm (See Applicants' Published Application, P39 and 45). It is well settled that overlapping ranges are *prima facie* evidence of obviousness. Therefore, it would have been obvious to one having ordinary skill in the art to have selected the portion of Umeya et al's range that corresponds to the claimed range. *In re Malagari*, 184 USPQ 549 (CCPA 1974).

As to claim 6, Umeya et al teaches that the ultrafines of the inorganic non-metallic or metallic materials used as the coating material can be prepared by known procedures, including physical means such as arc-discharge plasma jet, arc dissolution, high-frequency plasma, gas evaporation or chemical means such as reduction or oxidation of vapor of inorganic non-metallic or metallic materials or thermal decomposition of hydrocarbon or its derivatives (See column 3, lines 1-10). Bickmore et al teaches that the reactive fluid may comprise *oxygen* (See column 9, lines 23-26).

<u>As to claim 12</u>, **externally heated** flame and/or **multiple burner flame** of Bickmore et al teaches that read on claimed concentric zone. In any case, the limitations of dependent claim 12 are described in the specification as being not subject matter of claimed invention (See specification, page 27, P64, five last lines).

Claims 1, 4, 6, 11-15, 17, 18, 20, 27 and 31-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bickmore et al '997 in view of Umeya et al '449.

Bickmore et al discloses a method of manufacturing powder comprising: preparing solutions or suspensions or <u>emulsions</u> (See column 4, lines 33-35) of metal-containing precursors of <u>multiple metals</u> (See column 3, lines 52-67) such as nitrate, nitrites, nitriles, nitrides, carbonates, bicarbonates, hydroxides, cyanos, organometallics, ***carboxylates*** (See column 4, line 32), amines, and amides (See column 4, lines 30-33); feeding *atomized* metal-containing precursor (i.e. claimed spraying) or, alternatively, carried in a gas or a mix of gases (See column 5, lines 19-20) to a **<u>reaction zone</u>** thereby creating a vapor of the precursor; adding nitrogen, hydrogen (See column 2, lines 33-34), air, <u>oxygen</u> or ammonia (claimed reactive fluid) to the reaction zone (See column 5, lines 23-25); conducting *combustion* (See column 5, lines 19-46) using any kind of flame including *externally heated* flame, *multiple burner flame* or a combination of different flames (See column 5, lines 44-46) at temperatures in **<u>excess of 600^{0}C</u>** at which diffusion kinetics will be sufficiently fast that a compositionally uniform powder will be produced (See column 5, lines 46-50). The combustion product gases are *quenched* (See column 5, line 60) to freeze the growth and further reaction of the product by expansion of gases, addition of coolant gases or liquids, addition of materials which absorb heat (for example, heat

absorption associated with phase transformation of liquid nitrogen to gaseous nitrogen), radiative cooling, conductive cooling, convective cooling, application of cooled surface, or impinging into liquid (See column 5, lines 64-67 to column 6, lines 1-4); and then nanoscale powders (See column 2, lines 45-49; column 4, lines 14-22) are collected (See column 5, lines 60-63) by separating the fine powder-containing stream into gas and solid stream using bag houses containing polymeric or inorganic filters, electrostatic filtration, surface deposition on cold surfaces followed by scraping with a blade, centrifugal separation, in-situ deposition in porous media, and absorption or adsorption in liquids or solids (See column 6, lines 13-23).

It is the Examiner's position that temperatures in **excess of 600^0C** include claimed temperature of "greater than 1500^0C" since Bickmore et al do not limit combustion temperatures.

Bickmore et al further teaches that metal-containing precursors of multiple metals can be used for making mixed metal compounds (See column 3, lines 52-67). Bickmore et al also teaches that with varying combustion conditions, the product chemistry may be varied to obtain e.g. non-stoichiometric *reduced* oxide with the use of reducing gases such as **hydrogen** (See column 2, lines 29-33). Obviously, **metal alloy** powder may be produced in the presence of hydrogen.

Bickmore et al fails to teach that carrier particles are added to a stage of combustion processing (Claim 16); the powder manufactured comprises carrier particles comprising ceramic and attached particles comprising an alloy (Claim 27).

Umeya et al teaches that ultrafines of a metallic material such as a **metal alloy** (See column 2, lines 53-54, 59-65) formed in a vapor phase can be used for producing coated non-metallic particles such as **ceramic** particles (See column 2, line 3) which are coated on the

surface with ultrafines of the metallic material by introducing the particles of the inorganic material to be coated into a stream carrying the **ceramic** particles and bringing the particles to be coated into contact with said ultrafines in a fluidized state. The coated particles are used for the production of a sintered product. See column 2, lines 23-35. The ultrafines of the metallic materials used as the coating material can be prepared by known procedures, for example, by arc-discharge plasma jet, arc dissolution, high-frequency plasma, gas evaporation or chemical means such as reduction or oxidation of vapor of inorganic non-metallic or metallic materials (See column 3, lines 1-10). The particles of the core material are introduced into a vapor stream containing the ultrafines of the coating material by any means, e.g., in the form of a dispersant in a vapor phase carried by a carrier gas and the ultrafines are contacted with the particles of the core material in a fluidized state (See column 3, lines 12-17). In that case, the ultrafines as prepared by the physical or chemical means are in a nascent state, i.e., in an activated state containing a free radical. When the ultrafines come into contact with the particles of the core material, the ultrafines will be covalently bonded to the particles, by which both particles are chemically bonded together strongly. See column 3, lines 17-23.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a process of Bickmore et al for producing ceramic particles coated with a metallic material such as metal alloy by adding to a ceramic powder formed in the reaction zone of the flow reactor core ceramic particles.

As to claimed order of adding ingredients, claimed order of adding ingredients would be obvious for the reasons discussed above.

As to claim 6, Bickmore et al teaches that the reactive fluid comprises *oxygen* (See column 9, lines 23-26).

As to claim 12, **externally heated** flame and/or **multiple burner flame** of Bickmore et al teaches that read on claimed concentric zone. In any case, the limitations of dependent claim 12 are described in the specification as being not subject matter of claimed invention (See specification, page 27, P64, five last lines).

Claims 1, 4, 6, 11-15, 17, 18, 20, 27 and 31-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Konig et al (US 5,136,120) in view of Holzl (US 3,565,676), further in view of Umeya et al '449.

Konig et al discloses a method of manufacturing nanoscale powder comprising providing a metal-containing precursor such as BCl_3, boric acid esters, boran, $SiCl_4$, other chlorosilanes, silanes, metal halides, partly hydrogenated metal halides, metal hydrides, metal alcoholates, metal alkyls, metal amides, metal azides, metal boranates and metal carbonyls (See column 2, lines 55-61); evaporating the metal-containing precursor, which may be in solid or liquid state (See column 4, lines 66-68) and feeding *evaporated* metal-containing precursor (See column 5, lines 1-2) and a pre-heated *reactive fluid* such as H_2, NH_3 or CH_4 or air and/or oxygen (See column 5, lines 7-8) to a reaction zone; conducting processing of the stream at temperatures 500-2000^{0}C (claimed combustion processing) (See column 5, lines 19-20) thereby producing a metal or ceramic powder; separating the metal or ceramic powder in a back-blowing filter at temperatures 300-1000^{0}C (claimed cooling) (See column 6, lines 1-5); cooling the powder in a

cooling container 12 by blowing in various gas/vapour mixtures (claimed quenching) (See column 6, lines 26-31); and collecting the powder (See column 6, lines 28-29).

Konig et al further teaches that the process may be used for making metal alloy powder (See column 4, lines 21-28). Konig et al in view of Holzl fails to teach that carrier particles are added to a stage of the combustion processing (Claim 16); the powder manufactured comprises carrier particles comprising ceramic and attached particles comprising an alloy (Claim 27).

Umeya et al are applied here for the same reasons as above.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a process of Konig et al in view of Holzl for producing ceramic particles coated with a metallic material such as metal alloy by adding to a ceramic powder formed in the reaction zone of the flow reactor core ceramic particles.

As to claimed order of adding ingredients, claimed order of adding ingredients would be obvious for the reasons discussed above.

As to high temperature > 1500^0C, Konig et al fails to teach that the combustion processing was conducted at temperatures greater than 1500^0C (Claim 15).

Holzl teaches that WF_4, WF_3 and WF_2 formed in the reaction zone as by-products during chemical vapor decomposition of WF_6 are non-volatile at the deposition temperatures and become trapped in as a solid impurity in the deposited tungsten. These by-products can be vaporized only at temperatures around 1800-2500^0C. See column 2, lines 5-15. In other words, the temperature of thermal processing of the metal precursor in a reaction zone would depend on a particular metal precursor. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have conducted thermal processing of the metal

precursor in a reaction zone in Konig et al at very high temperatures including claimed temperatures of greater than 1500^0C depending on vaporization temperature of a metal precursor or by-products with the expectation of providing the desired non-contaminated mono-dispersed powder.

As to claim 4, Konig et al teach that nano- or micro-dispersed (crystalline or amorphous) metal and/or ceramic powders, preferably **metal** and/or ceramic powder, carbides, nitrides, borides, silicides, phosphites, sulphides, oxides and/or combinations thereof containing the elements B, Al, Si, Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, La, Y, Fe, Co, Ni or these elements alone or in *combination with one another* (i.e. **alloy**) can be produced using their method (See column 4, lines 21-28).

As to claim 12, Konig et al do not limit their teaching to any of known energy sources such as plama, laser beam or *flame* (See column 1, lines 26-27). Therefore, any known flame energy sources can be used in Konig et al including well known concentric burners. In any case, the limitations of dependent claim 12 are described in the specification as being not subject matter of claimed invention (See specification, page 27, P64, five last lines).

Claims 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Konig et al '120 in view of Holzl '676, further in view of Umeya et al '449, as applied above, and further in view of Bickmore et al '997.

Konig et al further discloses that metal-containing precursors include BCl_3, boric acid esters, boran $SiCl_4$, other chlorosilanes, silanes, metal halides, partly hydrogenated metal halides, metal hydrides, metal alcoholates, metal alkyls, metal amides, metal azides, metal boranates and

metal carbonyls (See column 2, lines 55-61). Konig et al fails to teach that metal-containing precursors include a metal carboxylate.

Bickmore et al teach that metal-containing precursors such as nitrate, nitrites, nitriles, nitrides, carbonates, bicarbonates, hydroxides, cyanos, organometallics, carboxylates, amines, and amides may be used for manufacturing nanoscale powder (See column 4, lines 30-35).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used metal carboxylates in Konig et al in view of Holzl instead of metal amides with the expectation of providing the desired nanoscale powders since Bickmore et al teach that carboxylates and amides may be used for manufacturing nanoscale powder.

(10) Response to Argument

Rejection under 35 U.S.C. § 112, 1st and 2nd paragraph

Arguments are moot since the rejections are withdrawn.

Rejection under 35 U.S.C. § 103(a)

V. CLAIMS 1, 4, 6, 11-15, 17, 18, 20, 27, AND 31-35 ARE NOT OBVIOUS UNDER 35 U.S.C. § 103(A) OVER U.S. PATENT NO. 5,489,449 to UMEYA ET AL. (hereinafter "Umeya") IN VIEW OF U.S. PATENT NO. 5,984,997 to BICKMORE ET AL. (hereinafter "Bickmore")

(A) Appellant disagrees with the Office's position, as there cannot be a prima facie case of obviousness with respect to an order of steps, if the cited references, namely Umeya and Bickmore do not disclose or suggest the claimed steps (See Appellants Arguments, pages 14-15).

The Examiner respectfully disagrees with this argument. It is not always necessary that references disclose or suggest the claimed steps because MPEP 2144.04 [R-6], IV C states that selection of ***any*** **order** of mixing ingredients is prima facie obvious (In re Gibson, 39 F.2d 975, 5 USPQ 230 (CCPA 1930)); and also, selection of ***any*** **order** of performing process steps is prima facie obvious in the absence of new or unexpected results (In re Burhans, 154 F.2d 690, 69

USPQ 330 (CCPA 1946)). Moreover, it is held that the performance of two steps **simultaneously**, which have previously been performed in *sequence* was held to be obvious. *In re Tatincloux* 108 USPQ 125 (CCPA 1955).

Since Appellant didn't show objective factual evidence of criticality of claimed order of process steps over prior art process steps, the rejection stands.

(B) Appellant argues that Bickmore clearly fails to cure the deficiencies of Umeya for cooling the stream to nucleate the slurry precursor or quenching the stream to prevent agglomeration and grain growth. Bickmore describes a method for producing homogenous nanoparticle powders from mixtures of elements and not from one or more metal-containing precursors and carrier particles such that nano-dispersed powders of carrier particles and metal-containing precursors dispersed thereon are produced as presently claimed. As such, Bickmore can be relied upon at most for providing a method for producing carrier particles and nothing more. Further evidencing Bickmore's lack of teaching carrier particles and therefore, the inability of Bickmore to teach a mixture of metal-containing particles and carrier particles to form a slurry, is the Office conceding in the Office Action dated November 18, 2008, that Bickmore fails to teach that carrier particles are added to a stage of combustion processing (claims 16), which was the subject matter incorporated into independent claim 1 in the Amendment filed February 17, 2009. Therefore, Bickmore fails to teach or suggest preparing a mixture of metal-containing precursors and carrier particles to create a slurry precursor and therefore fails to cure the deficiencies of Umeya. Accordingly, neither Umeya nor Bickmore alone or in combination disclose the step of preparing a mixture of one or more metal-containing precursors and carrier particles to create a slurry precursor. (See Appellants Arguments, page 16).

The Examiner respectfully disagrees with this argument. First of all, the limitation "cooling the stream to nucleate the **slurry** precursor thereby creating nucleated nanoscale powders" as recited in claim 1 seems to be an entirely incorrect statement. The precursor stream is no longer in the form of "**slurry**" since the slurry vaporizes immediately upon entering the high temperature stream. Second, Bickmore teaches that **combustion** product gases are *quenched* (See column 5, line 60) to freeze the growth and further reaction of the product. In other words, Bickmore teaches that growth of any particles from metal precursors at high temperature can be stopped by quenching (which obviously includes cooling). Thus, it is irrelevant whether inert carrier particles are present or absent to stop nucleation of metal precursors.

As to the Appellants statement "Therefore, Bickmore fails to teach or suggest preparing a mixture of metal-containing precursors and carrier particles to create a **slurry** precursor and

therefore fails to cure the deficiencies of Umeya", Bickmore is a secondary reference which is relied upon to show how to stop nucleation of metal precursors. Thus, it is irrelevant whether Bickmore shows "slurry" or not.

(C) Appellant submits that while Appellant can appreciate the Office's position with respect to obviousness when merely rearranging the order of steps or mixing of ingredients, such position would be warranted if for example, considering a product or product-by-process claim, and not for a method claim. Rearranging the order of steps in a method claim would render the claimed method inoperative.

The Examiner respectfully disagrees with this argument. MPEP 2144.04 [R-6], IV C states that selection of ***any*** **order** of mixing ingredients is prima facie obvious (In re Gibson, 39 F.2d 975, 5 USPQ 230 (CCPA 1930)); and also, selection of ***any*** **order** of performing process steps is prima facie obvious in the absence of new or unexpected results (In re Burhans, 154 F.2d 690, 69 USPQ 330 (CCPA 1946)). Moreover, it is held that the performance of two steps **simultaneously**, which have previously been performed in *sequence* was held to be obvious. *In re Tatincloux* 108 USPQ 125 (CCPA 1955).

Thus, there is no indication in MPEP 2144.04 [R-6], IV C or *In re Tatincloux* 108 USPQ 125 (CCPA 1955) that obviousness should be limited only to product or product-by-process claims.

(Also, the Examiner would like to recite the opinion of the Board on related subject matter in **process** claims: "Concerning Appellant's argument with respect to an order of addition of the metal and anion precursors, absent evidence of unexpected results, it is a matter of obviousness for one of ordinary skill in the art to alter the order of addition of reaction components". See page 8, paragraph 2 of the Decision of the Board rendered 7/13/2007 on case 10/361,882).

In other words, if prior art teaches process steps a), b) and c) in that order, simply *rearranging* the process steps in any other order would not achieve a process that is novel over the prior art *unless of showing criticality* of rearranged process steps. Since Appellant didn't show criticality of claimed order of process steps over prior art process steps, the rejection stands.

VI. CLAIMS 1,4,6, 11-15, 17, 18, 20, 27, AND 31-35 ARENOT OBVIOUS UNDER 35 U.S.C. § 103(A) OVER BICKMORE IN VIEW OF UMEYA

Appellant submits that Umeya fails to cure the deficiencies of Bickmore for at least the reasons discussed in the preceding rejection, namely for failing to teach a slurry precursor of metal-containing precursors and carrier particles.

The Examiner respectfully disagrees with this argument for the reasons discussed above.

VII. CLAIMS 1,4,6, 11-15, 17, 18, 20, 27, AND 31-35 ARE NOT OBVIOUS UNDER 35 U.S.C. § 103(A) OVER U.S. PATENT NO 5,356,120 TO KONIG, ET AL. IN VIEW OF U.S. PATENT NO. 3,565,676 TO HOLZL ET AL. IN VIEW OF UMEYA

Appellant submits that independent claim 1 does not recite either "combustion processing" or "processing at "greater than 2500 C" as asserted by the Office and that the Office is reading limitations into independent claim 1 that are not there. The Office is reminded that it is impermissible to import subject matter from the specification into the claim (see MPEP 2111). For at least this reason, the Office's rejection of independent claim 1 over Konig in view of Holzl further in view of Umeya has been made improperly and should be withdrawn. Additionally, nothwithstanding the foregoing, Konig, Holzl and Umeya each fail to teach or fairly suggest "preparing a mixture of one or more metal-containing precursors and carrier particles to create a slurry precursor" and then "feeding the slurry precursor to a reaction zone of a high temperature reactor thereby creating a vapor of the slurry precursor" as recited in independent claim 1.

The Examiner respectfully disagrees with this argument. First of all, claim 1 recites "high temperature" which according to the specification as originally filed is temperature **> 1500^0C** (See P89 of Published Application). Claim 15 also recites that the "high temperature" of claim 1 is temperature **> 1500^0C**. Thus, The Office didn't import subject matter from the specification into the claim.

As to failing of teaching the slurry, the Examiner respectfully disagrees with this argument for the reasons discussed above.

VIII. CLAIMS 31-33 ARE NOT OBVIOUS UNDER 35 U.S.C. § 103(A) OVER KONIG IN VIEW OF HOLZL, AND FURTHER IN VIEW OF UMEYA, AND FURTHER IN VIEW OF BICKMORE.

Appellant submits that Claims 31-33 depend directly from and add further limitations to independent claim 1 and are allowable over Konig in view of Holzl and Umeya for at least the same reasons set-forth above with respect to independent claim 1, namely none of Konig, Holzl, or Umeya teach or suggest at least preparing a mixture of one or more metal-containing precursors and carrier particles to create a slurry precursor, and therefore any combination of

these references still fails to teach preparing a mixture as recited in the claims. Additionally, Bickmore describes a method for producing homogenous nanoparticle powders from mixtures of elements and not carrier particles coated with a metal-containing precursor as presently claimed and therefore also fails to cure the deficiencies of Konig, Holzl and Umeya.

The Examiner respectfully disagrees with this argument for the reasons discussed above.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Elena Tsoy Lightfoot /

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